

# Elasto-static Singular field in the Vicinity of a Triple Junction

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SCEC Rupture Dynamics Code Validation  
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# Most singular solution

Seek most singular solution for  $0 < \lambda < 1$  (bounded strain energy)

Assume  $\lambda \in \mathbb{R}$

$$u \sim f(\theta, \lambda)r^\lambda$$

$$\sigma \sim g(\theta, \lambda)r^{\lambda-1}$$

Asymptotic solution determined up to a constant (scaling) and rigid body displacement

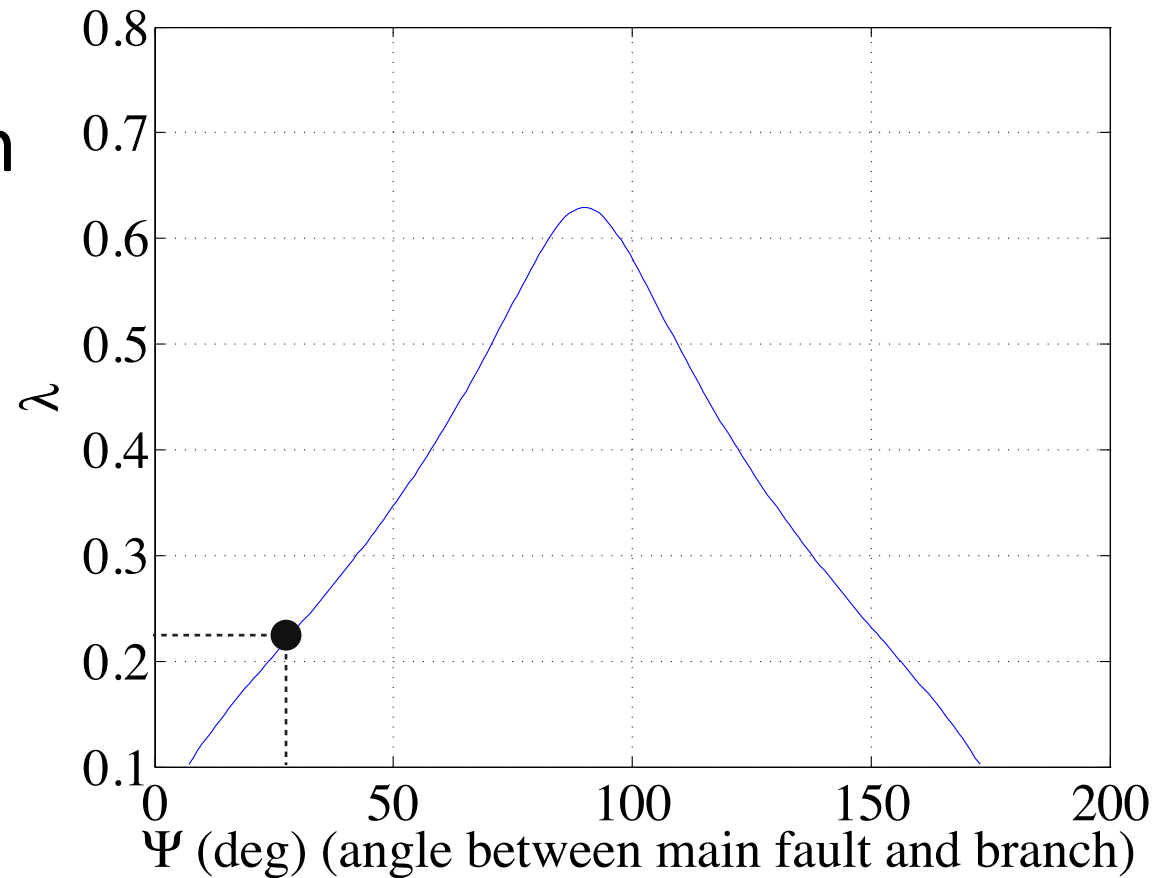
Boundary conditions:

Frictionless, no-opening, continuity

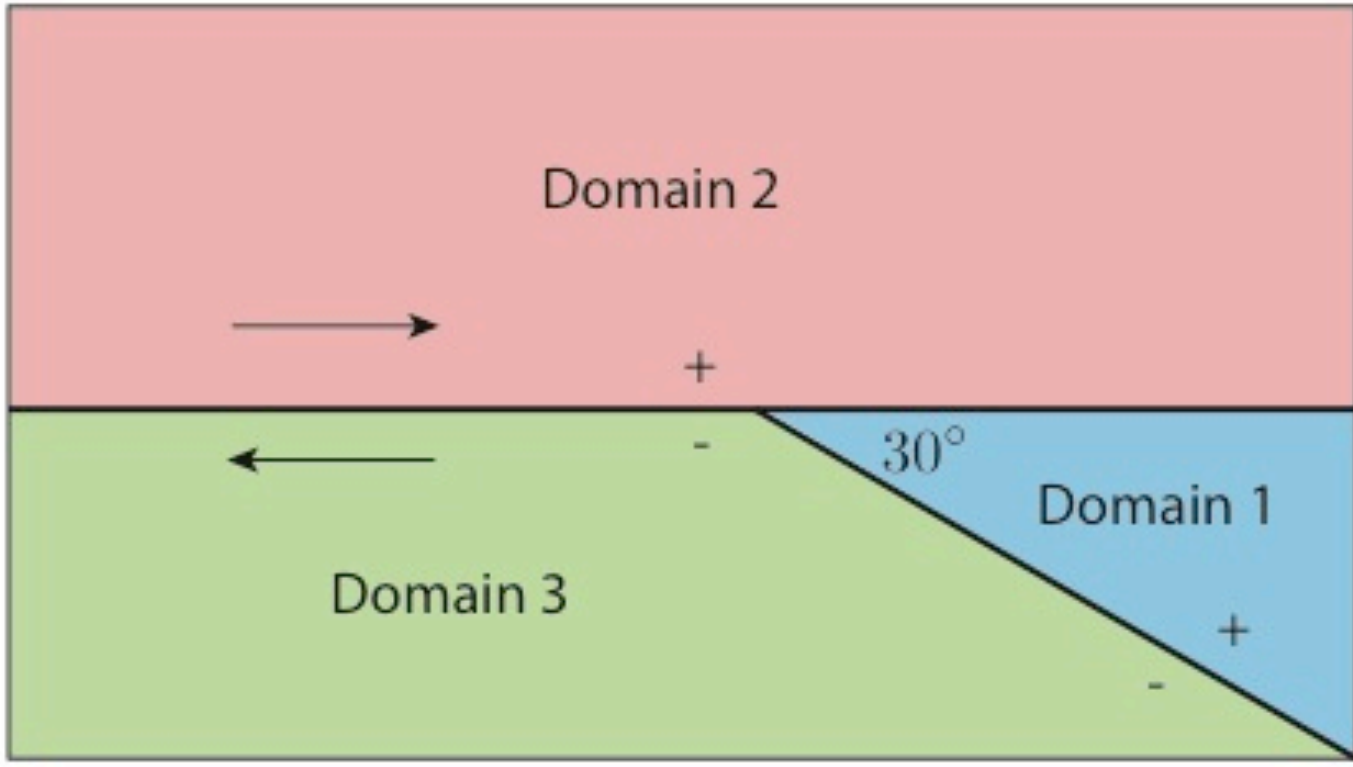
12 unknowns! Solve 12 x 12 system numerically

# Singular power

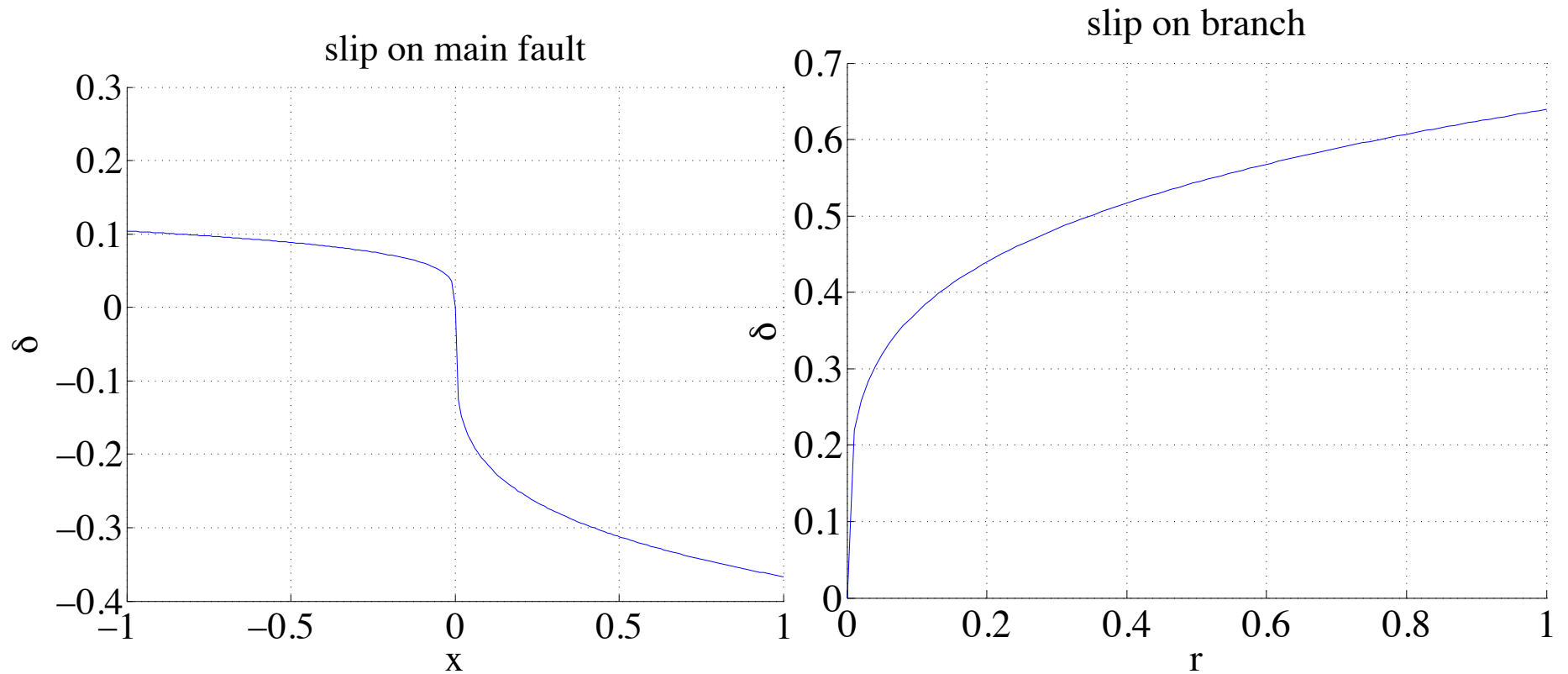
- For our problem  
 $\lambda \approx 0.23$
- Independent of Poisson's ratio



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# Slip and displacement



Displacement is zero on main fault nearest domain 2  
and domain 1

# Normal stress

